

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
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REC'D 07 FEB 2005

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WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 660119-401PC		Date of mailing (day/month/year) 03 FEB 2005	
		FOR FURTHER ACTION See paragraph 2 below	
International application No. PCT/US04/09295	International filing date (day/month/year) 26 March 2004 (26.03.2004)	Priority date (day/month/year) 26 March 2003 (26.03.2003)	
International Patent Classification (IPC) or both national classification and IPC IPC(7): G09G 5/00, 5/08; B25J 15/00, 15/02; G06F 19/00 and US Cl.: 345/156, 158; 901/30; 318/560; 700/245			
Applicant MIMIC TECHNOLOGIES, INC.			

1. This opinion contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|--|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the opinion |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input checked="" type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Alexander Eisen Telephone No. (703) 306-0377
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

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Box No. I Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>2, 4, 7-10, 12-24</u>	YES
	Claims <u>1, 3, 5, 6, 11</u>	NO
Inventive step (IS)	Claims <u>2, 4, 7-10, 12-24</u>	YES
	Claims <u>1, 3, 5, 6, 11</u>	NO
Industrial applicability (IA)	Claims <u>1-24</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1, 3, 5, 6 and 11 lack novelty under PCT Article 33(2) as being anticipated by Hamma, US 5,248,960.

With respect to claim 1 Hamma discloses a haptic interface device 20 to provide haptic interaction to a user manipulating a tool, the haptic interface device comprising an attachment point (cable 24 at a pointer 25), a first cable 24 having a first and a second end, the first end coupled to the attachment point; a first tool translation effector device (assembly in housing 21) having coupled thereto the second end of the first cable (to a spool 45), the first tool translation effector device including controlling means for controlling the first cable such that, as the attachment point moves, the first cable is retracted or paid out accordingly by the first tool translation effector device, metering means (encoder 58; col. 9, lines 20-35) for metering the first cable as it is retracted and paid out; and establishing means for establishing, during an initialization procedure, a distance between the first tool translation effector device and the attachment point.

With respect to claims 3 and 6, Hamma teaches establishing means (col. 10, lines 28-42), which can calibrate the device from time to time.

As to claim 5 Hamma further discloses a sensor (encoding wheels 38, 58 and photo sensors 40, 41, 60 and 61).

As claim 11, the controlling means include tensioning means (spring; col. 7, ll. 47-56).

Claims 2, 4, 7-10 and 12-24 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest a haptic device for operation by a user, comprising a user interface tool configured to be manipulated by the user and moved within a volume of space, a first, a second, a third, and a fourth tool translation effector device, each coupled to a spool structure in positions such the first, second, third, and fourth tool translation effector devices define between them a tetrahedron within the volume of space, each of the tool translation effector devices including a respective spool and a respective encoder configured to provide a signal corresponding to rotation of the respective spool; first, second, third, and fourth cables each having a respective first and a respective second end, the first end of each of the first, second, third, and fourth cables coupled to the user interface tool and the second end of each of the first, second, third, and fourth cables wound and unwound on the spool of a respective one of the tool translation effector devices', and a first sensor configured to detect rotation of the user interface tool around an axis. Claims 1-24 meet the criteria set out in PCT Article 33(4), and thus accomplish industrial applicability because the subject matter claimed can be made or used in industry.

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Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

The description is objected to as containing the following defect(s) under PCT Rule 66.2(a)(iii) in the form or contents thereof:
"encoders 126" on page 26, line 7 should apparently read -encoders 125--.